Calibrating a Stem Thermometer

It is important to check the accuracy of your thermometer once a week or if you drop it. To check for accuracy, you will need a liquid at a known temperature. It is usually easiest to use either ice water (32ºF) or boiling water (212ºF). Many thermometers can be calibrated (adjusted) if they are not accurate. Read the manufacturer's instructions to be sure.

Ice Water Calibration

Fill a large glass with crushed ice and add clean water to fill in the air gaps. Immerse the thermometer stem at least 2 inches into the ice mixture. Wait for at least 30 seconds before adjusting. While the thermometer is still in the ice, hold the adjusting nut (under the head of the thermometer) with a wrench and turn the head until the pointer reads 32ºF.

Boiling Water* Calibration

Bring a pot of clean water to a full rolling boil. Immerse the thermometer stem at least 2 inches and wait for at least 30 seconds. (For safer handling, insert the stem of the thermometer into the hanging loop on the sheath.) Read the temperature.

Because it is usually difficult and potentially dangerous to adjust the thermometer while it is in boiling water, remove the thermometer and allow it to air-cool to room temperature. When it reaches room temperature, adjust the thermometer (turn the dial the proper number of degrees). For example, if the thermometer said 218ºF in the boiling water, turn if down 6º below the temperature it reads at room temperature. Put the thermometer back in the boiling water to make sure it now reads the proper temperature.

*Water boils at different temperatures depending on atmospheric pressure. Contact your local health department or Cooperative Extension office for the correct temperature of boiling for your area.

Other Types of Thermometers

Liquid ("spirit") filled—The oldest kind of thermometer used in home kitchens. They have either glass or metal stems filled with a colored liquid that rises to indicate the termperature. Designed to stay in the food during cooking; some can be calibrated. Broken glass can be a hazard.

Candy–These thermometers will usually measure temperatures ranging from 100-400ºF and are used in candy making or cooking with hot oil.

Oven–To verify the temperature in an oven, this bimetallic thermometer can measure between 100-600ºF.

Refrigerator and Freezer–Specially designed appliance thermometers can be kept in the refrigerator or freezer. For food safety and lengthened food storage, the refrigerator should be set to maintain temperature of 40ºF and the freezer should be set to hold 0ºF. Place the thermometer in the warmest part of the unit (usually nearest the door). Appliance thermometers are particularly important to monitor frozen and refrigerated food temperatures during power outages.

Thermometer Care

Food thermometers should be washed by hand in hot, soapy water. **Unless recommended by the manufacturer, they should not be submerged in water or washed in a dishwasher.** Many thermometers have a plastic face that can melt if dropped in a hot liquid, baked in the oven, or left close to heat. Some thermometers have glass parts, sharp probes, or are easily broken. To protect your thermometer, it is often safest to store it in its original packaging.

For More Information:

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USDA Food Safety and Inspection Service Thermy Campaign
(Much of this information and the majority of the images--except the front cover--were reprinted from this site)
www.fsis.usda.gov/food_safety_education/Types_of_Food_Thermometers/index.asp

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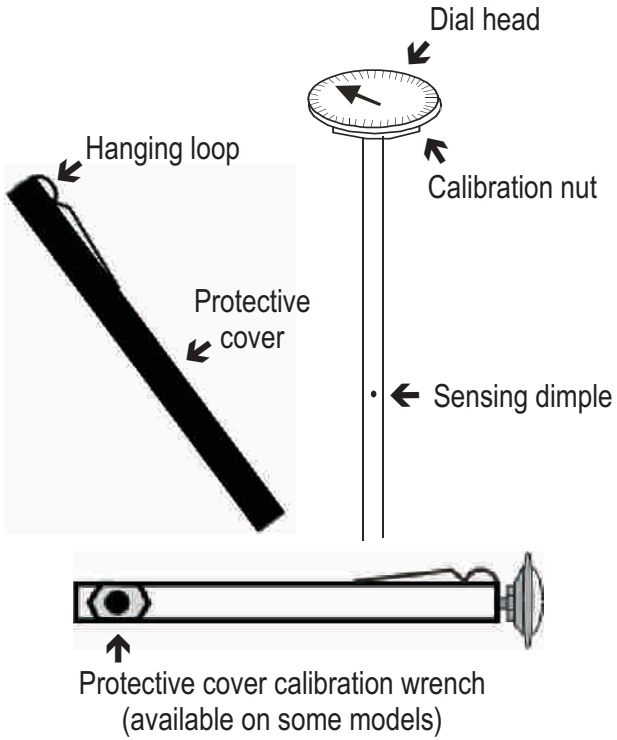
Food Thermometers

Food Safety Series



www.bfhd.wa.gov

PUBLIC HEALTH
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BENTON-FRANKLIN HEALTH DISTRICT

The most critical factor in destroying parasites and bacteria that can cause foodborne illness is cooking to proper temperatures. Using a thermometer to monitor temperatures is also important to make sure that certain foods (called potentially hazardous foods) are at safe temperatures.

There are many varieties of thermometers available to help keep your food safe. This brochure is designed to help you choose, use and maintain the thermometer that is right for your task.

Using a Food Thermometer

When properly used, most thermometers are accurate to within 2-4ºF. Proper use includes:

☑ **Calibration** Thermometers can become inaccurate and should be tested regularly.

☑ **Placement** Thermometers put in the wrong part of the food [such as the thinnest area, or near bone, fat or gristle] will not accurately measure the food.

☑ **Following manufacturer directions** The packaging should tell if the thermometer can be adjusted, how to care for the thermometer, and how to use it).

Where to Place the Food Thermometer

Meat... The thermometer should be placed in the thickest part of the meat away from the bone, fat or gristle and the metal cooking pan.

Poultry... Whole birds—place the thermometer in the thigh and breast (cook to 165ºF). If stuffed, also check the temperature of the stuffing (cook to 165ºF). To check poultry parts, put the thermometer in the thickest area.

Thin foods... For hamburgers, pork chops, and chicken breasts, it is easiest to use a thermocouple that can measure a thin food. To use a metal stem thermometer (that has to go at least 2 inches into the meat) insert the thermometer sideways through the meat.

Casseroles... Place the thermometer in the thickest part of the food or the center of the dish.

Common Thermometers Available

	Type	Picture	Description	Cost	Speed	Calibrate?	Pros	Cons
Digital	Thermocouple		Measures temp at the junction of two wires at the tip of a probe.	$$$$$	Fastest 2-5 seconds	Yes (But can be difficult)	Easy read. Used for thick and thin foods.	Expensive. Difficult to find in stores. Not designed to be used in food during cooking.
	Thermistor		Uses a ceramic resistor in the tip to measure temperature.	$$$	Fast ~10 seconds	Some models	Easy read. Used for thick and thin foods.	Expensive. Difficult to find in stores. Not designed to be used in food during cooking.
	Thermo-Fork		Combines either a thermocouple or a thermistor with a cooking fork.	$$$	Fast 2-10 seconds	No	Easy read. Handy for grilling. Used for thin foods.	Not designed to be used in food during cooking.
Dial-type	"Oven-Safe" AKA Meat Thermometers		Thermometers have a coil of two metals with different rates of expansion in the probe. Usually must be inserted ~2 inches into the food.	$$	Slow 1-2 minutes	Some models	Designed to be used in oven during cooking.	Slow read time. Only works in thick foods (more than 3" deep).
	"Instant-Read" AKA Metal Stem			$$	Fast 15 seconds	Some models	Easy to find in stores. Easy to calibrate.	Difficult to use in thin foods (less than 3" thick). Not designed to be used in food during cooking.
Single Use	Pop-Up		Commonly used in turkeys. A meltable material surrounds a spring that pops when at proper temperature.	$	Slow. Depends on cooking temperature.	No	Easy to read. Usually already installed by processor.	Confirm the temperature in other parts of the turkey with a standard thermometer.
	Disposable Sticks		Paper sensors with specific temperature-ranges. Change color when the food reaches proper temperature.	$	Fast	No	Disposable. Easy to read. Easy to transport.	Cannot be reused. Specific for certain temperatures--use only for foods for which they are intended. Not designed to be used in food during cooking.

Thermometer Placement Tips:

1. Avoid bone, fat, gristle and the pan surface.
2. Take the temperature in several locations if the food is irregularly shaped.
3. Take the temperature in the thickest part of the food.
4. Remove the food from the cooking surface (e.g. lift the hamubrger patty from the grill with a spatula) before taking the temperature of the food.

Can't I use color to tell when meat is done?

Color is not a reliable way to make sure that foods are cooked hot enough to destroy pathogens (microbes that cause illness). For example, hamburger meat may turn brown before *E.coli* bacteria that might be in the meat are killed.

Did you know?—1 out of 4 hamburgers turns brown before it is cooked to a safe temperature.

Source: www.fsis.usda.gov/OA/topics/gb.htm.